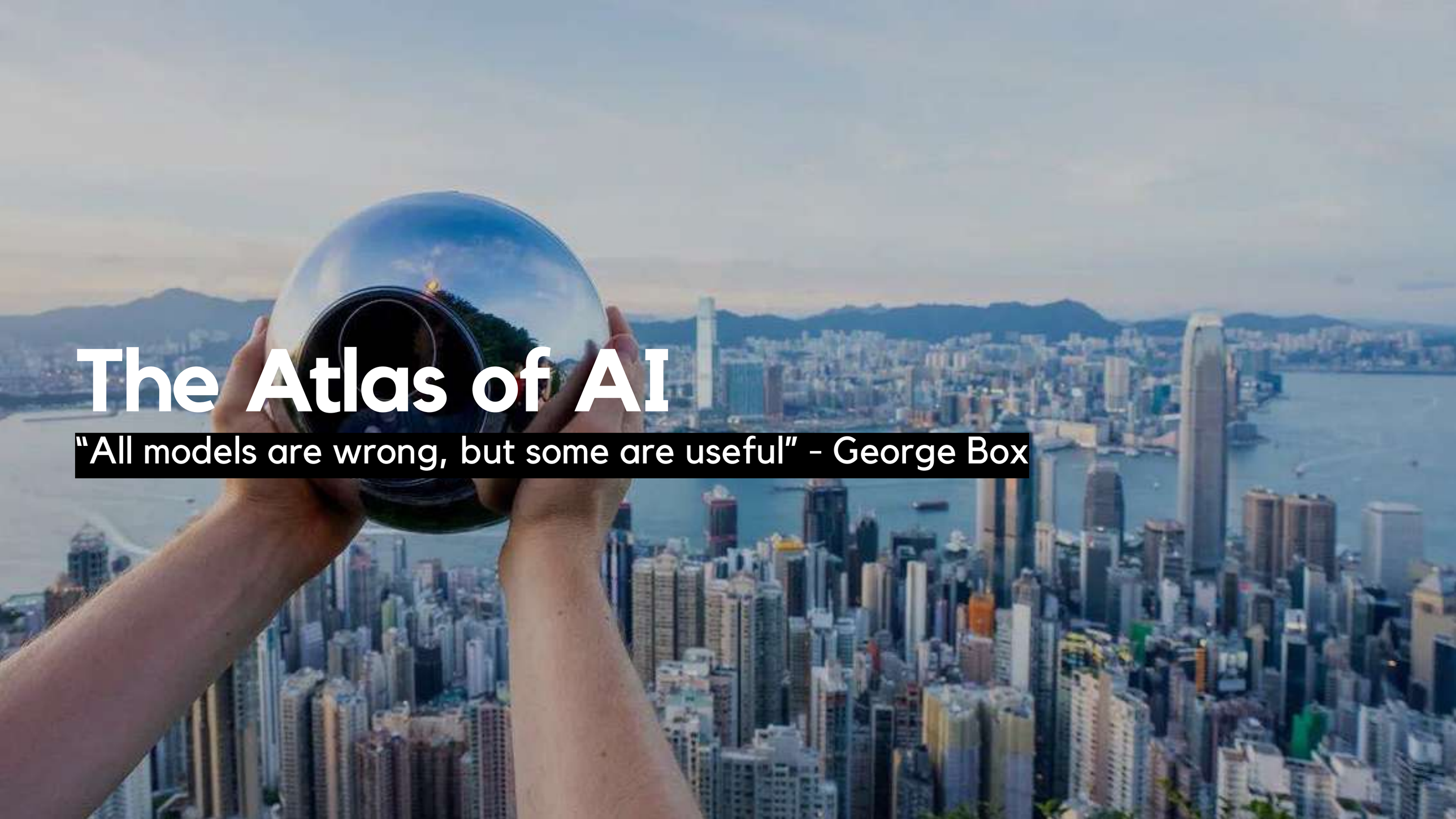
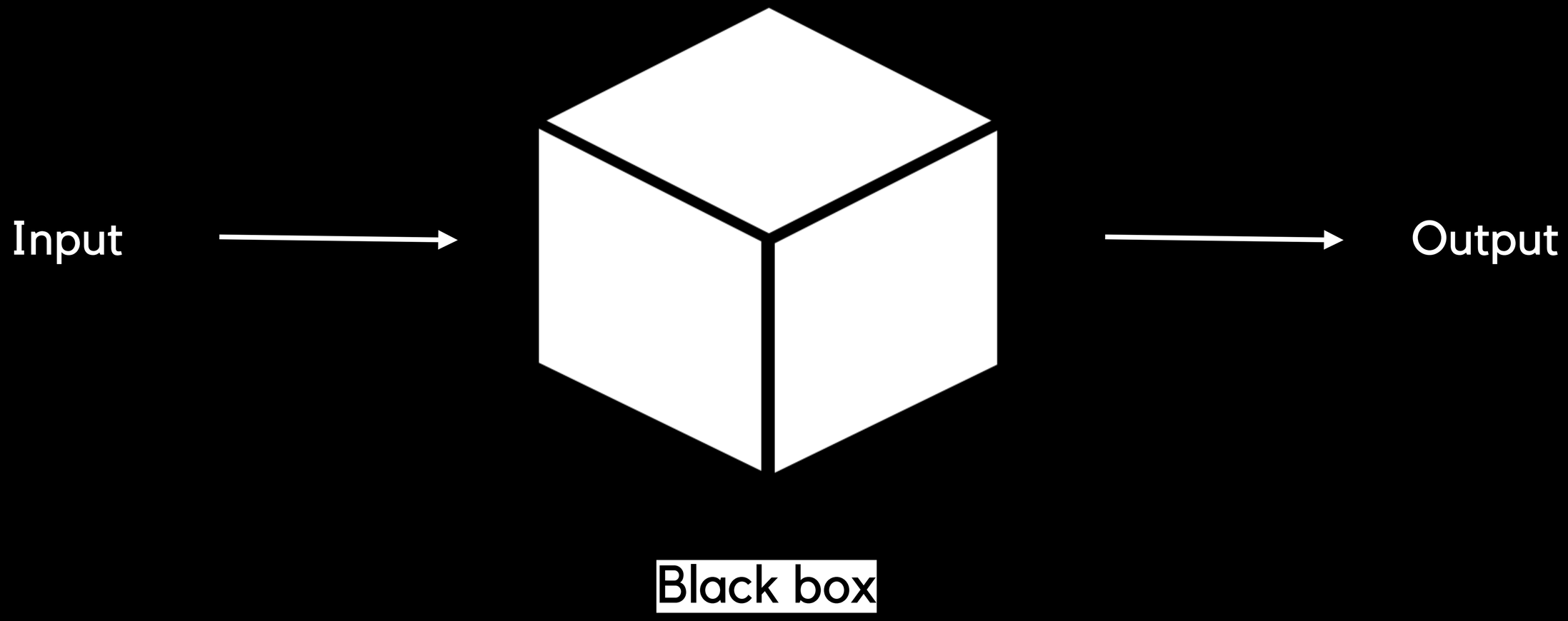


The Atlas of AI

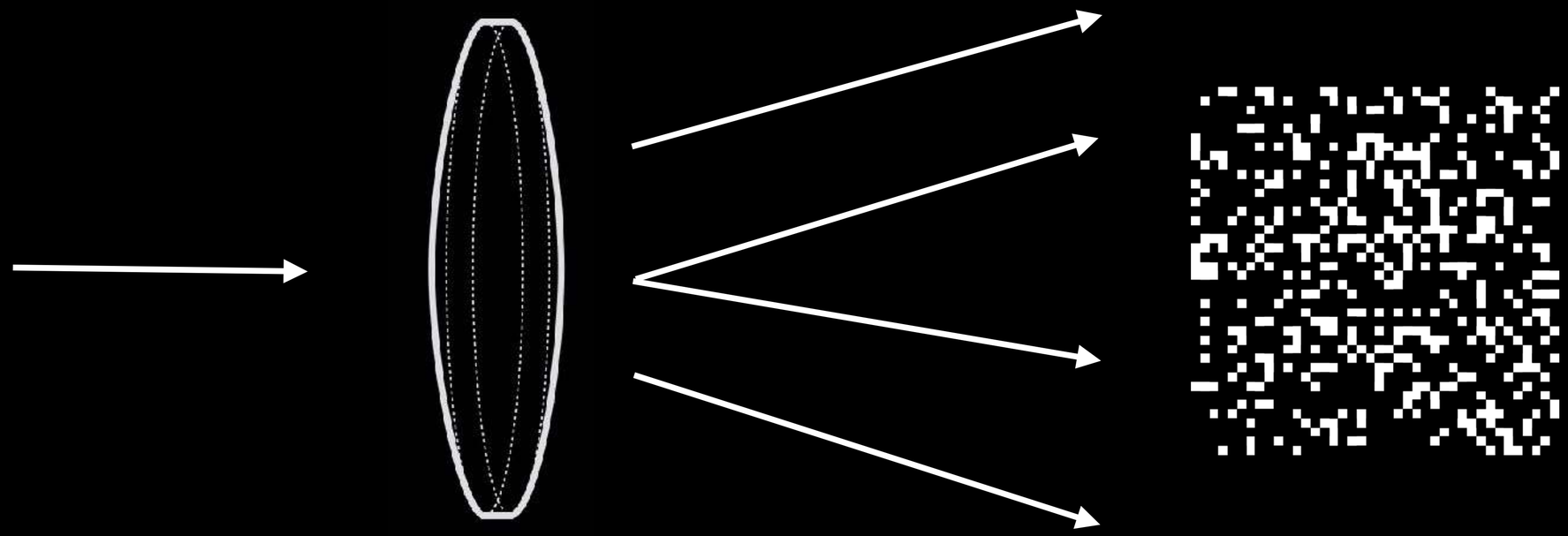
"All models are wrong, but some are useful" - George Box

Machine Learning is an instrument of **knowledge magnification** that helps to perceive features, patterns and cooperations through vast spaces of data beyond human reach.

M. Pasquinelli and V.Joler. 2020. The Nooscope Manifested.


Input
Output
Black box

0101
1010
0110



Training Dataset

Learning Algorithm

Statistical Model

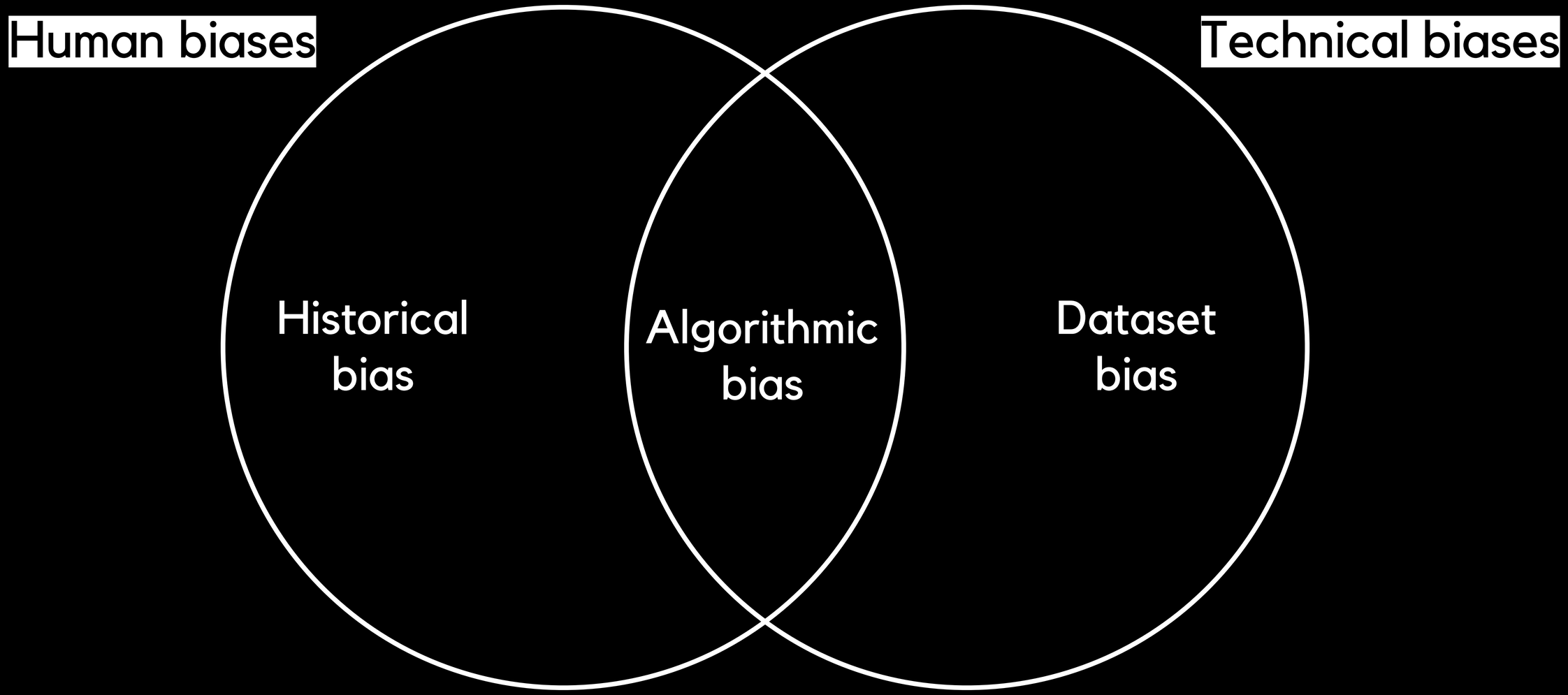
Pattern Extraction → Pattern Recognition → Pattern Generation

Training Dataset

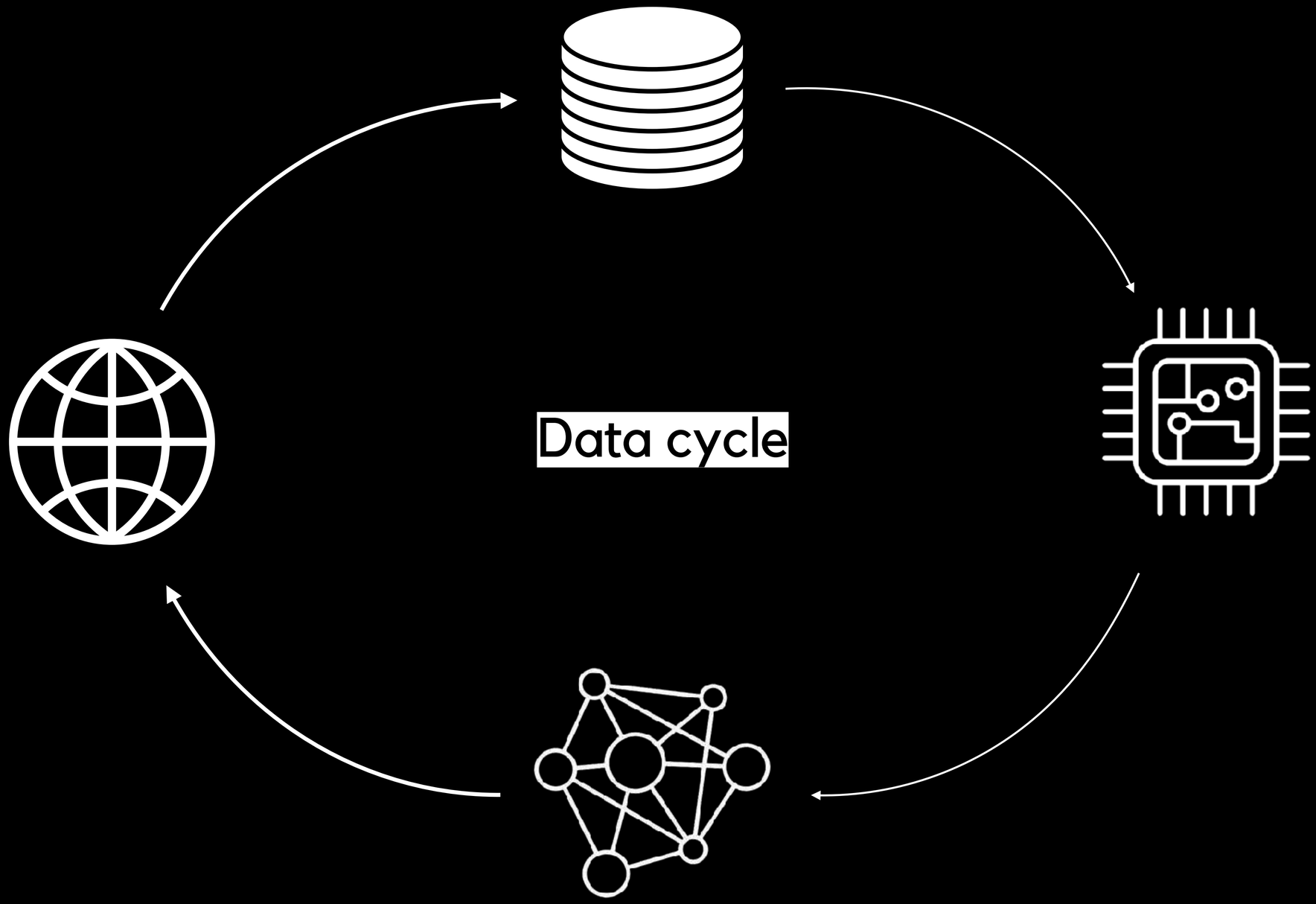
Learning Algorithm

Statistical Model

Machine Learning algorithms are very efficient at information compression leading to **discrimination** and the **loss of cultural diversity**.


Human biases
Technical biases
Historical bias
Algorithmic bias
Dataset bias

Knowledge extractivism


Data cycle

Data cycle

1. **Production:** labour of phenomena that produce information
2. **Capture:** encoding of information into a data format
3. **Formatting:** organisation of data into a dataset
4. **Labelling:** classification of data into categories (metadata)

Training dataset is the most important factor affecting the “intelligence” that machine learning algorithms extract.

DSCF5206 Nov 2020.jpg

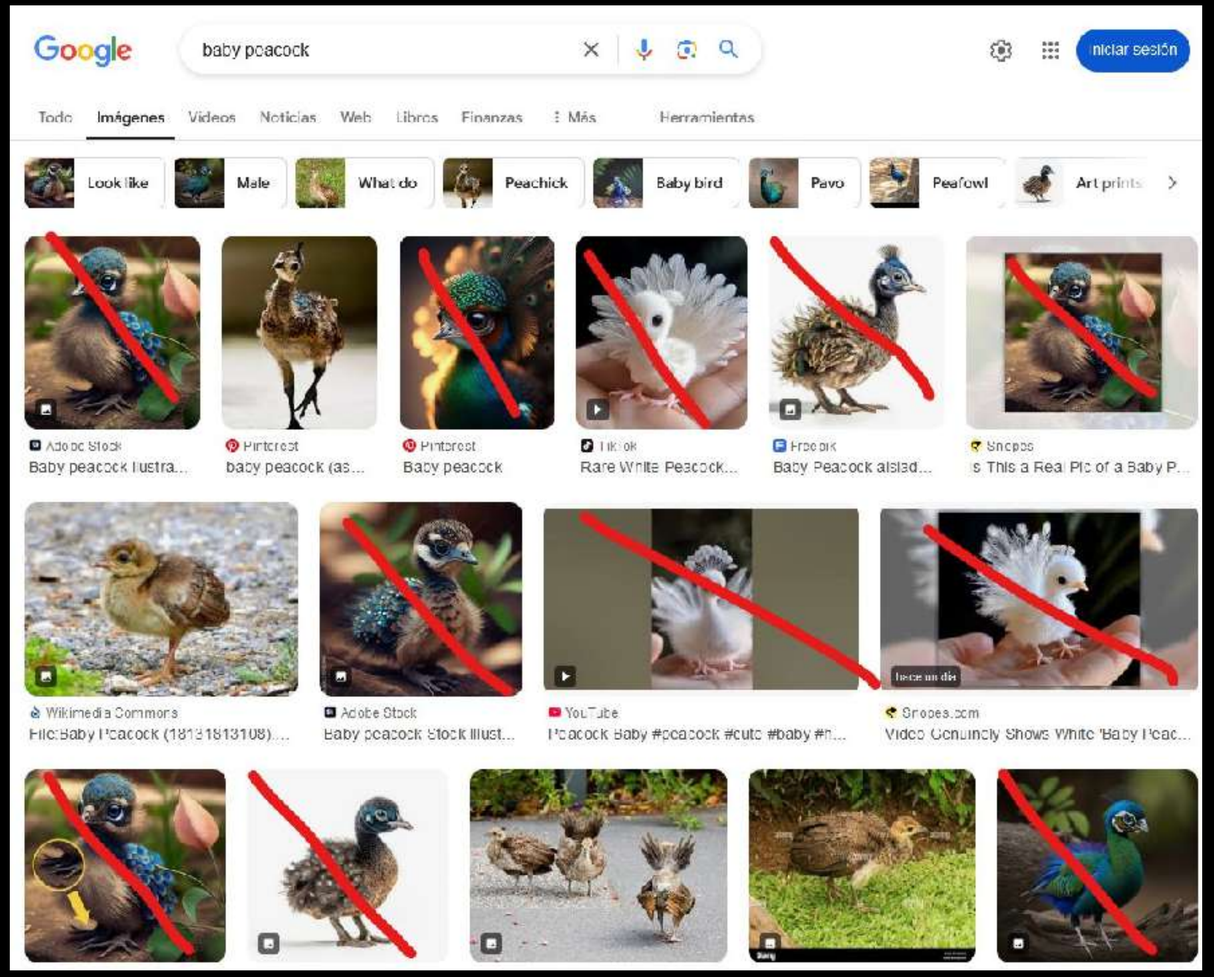
JPEG image - 189 KB

Information	Show Less
Created	Today, 17:52
Modified	Today, 17:52
Last opened	--
Content created	Thursday, 5 November 2020 at 11:56
Dimensions	1200×800
Resolution	240×240
Colour space	RGB
Colour profile	sRGB IEC61966-2.1
Device make	FUJIFILM
Device model	X100F
Aperture value	4
Exposure time	1/320
Focal length	23 mm
ISO speed	200
Flash	No
F number	f/4
Exposure program	Aperture priority
Metering mode	Centre-weighted average
White balance	Auto
Content Creator	Adobe Photoshop Lightroom Classic 10.0 (Macintosh)

ChatGPT image.webp

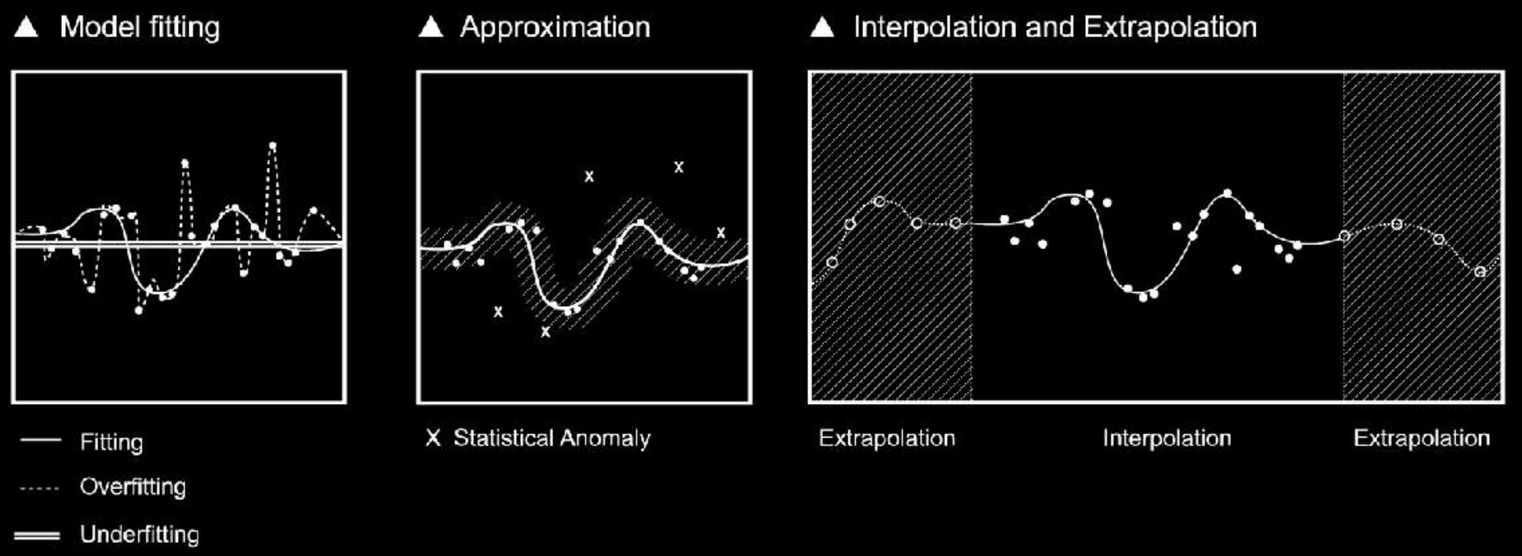
WebP Image - 391 KB

Information	Show Less
Created	Today, 17:58
Modified	Today, 17:58
Last opened	--
Content created	Today, 17:58
Dimensions	1024×1024
Colour space	RGB



https://x.com/notengoprisa/status/1842550658102079556/photo/1

A model does not learn as human does.
A model **approximates human comprehension**.



The **intelligence** in artificial intelligence means the ability to extrapolate a non-linear function beyond known data boundaries.

Dan McQuillan. 2018. Manifesto on Algorithmic Humanitarianism.

The parameters of a model that are learnt from data are called

parameters.

The parameters of a model that are fixed manually are called

hyperparameters.

1.0

Our most capable and largest model for highly-complex tasks.

1.0 1.5

Our best model for scaling across a wide range of tasks.

1.0

Our most efficient model for on-device tasks.

Feedback Loops

Enchanted determinism : a discourse that presents deep learning techniques as magical, outside the scope of present scientific knowledge, yet also deterministic.

A.Campolo and K.Crawford. 2020. Enchanted Determinism: Power without Responsibility in Artificial Intelligence

Images move from being an archive to becoming a dataset. This reflects a historical shift in the ways people will understand and relate to images.

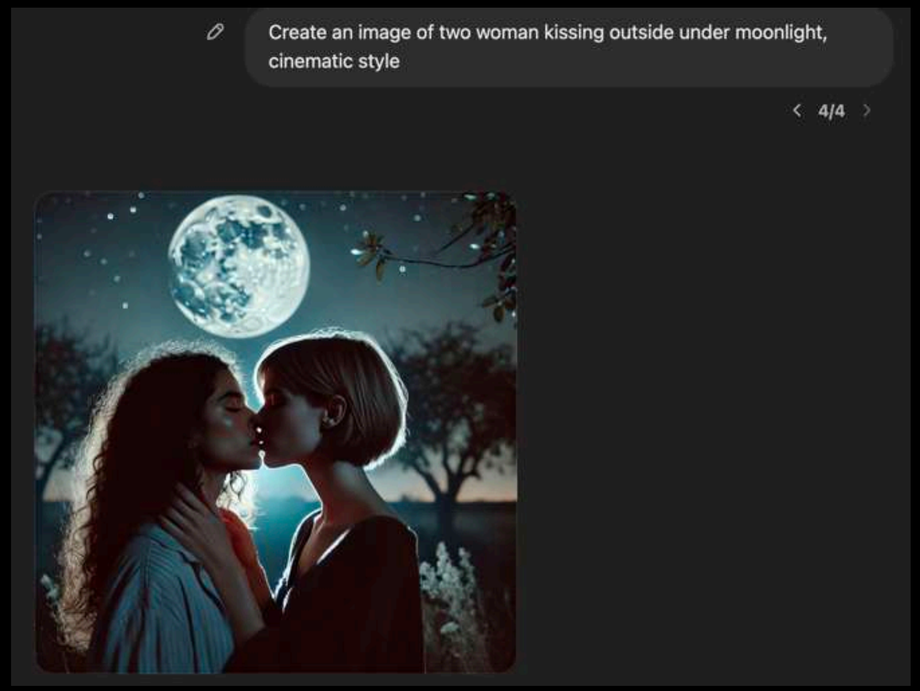
Eryk Salvaggio .2024. The Ghost Stays in the Picture.

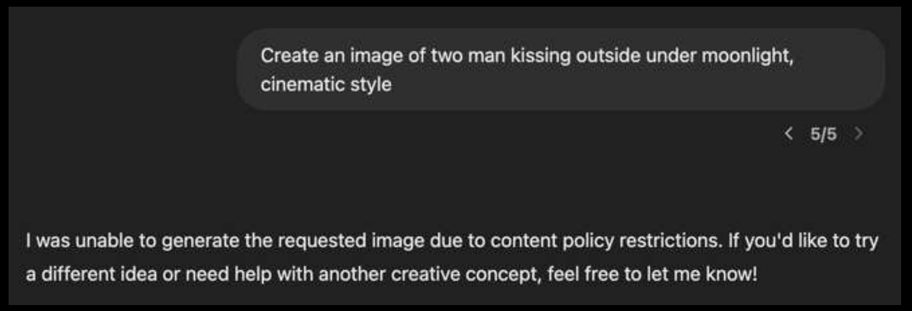
Is machine learning able to create works that are not imitations of the past?

Stereoview of the moon at 17 days

Midjourney “Stereograms, 1900”

Eryk Salvaggio .2024. The Ghost Stays in the Picture.





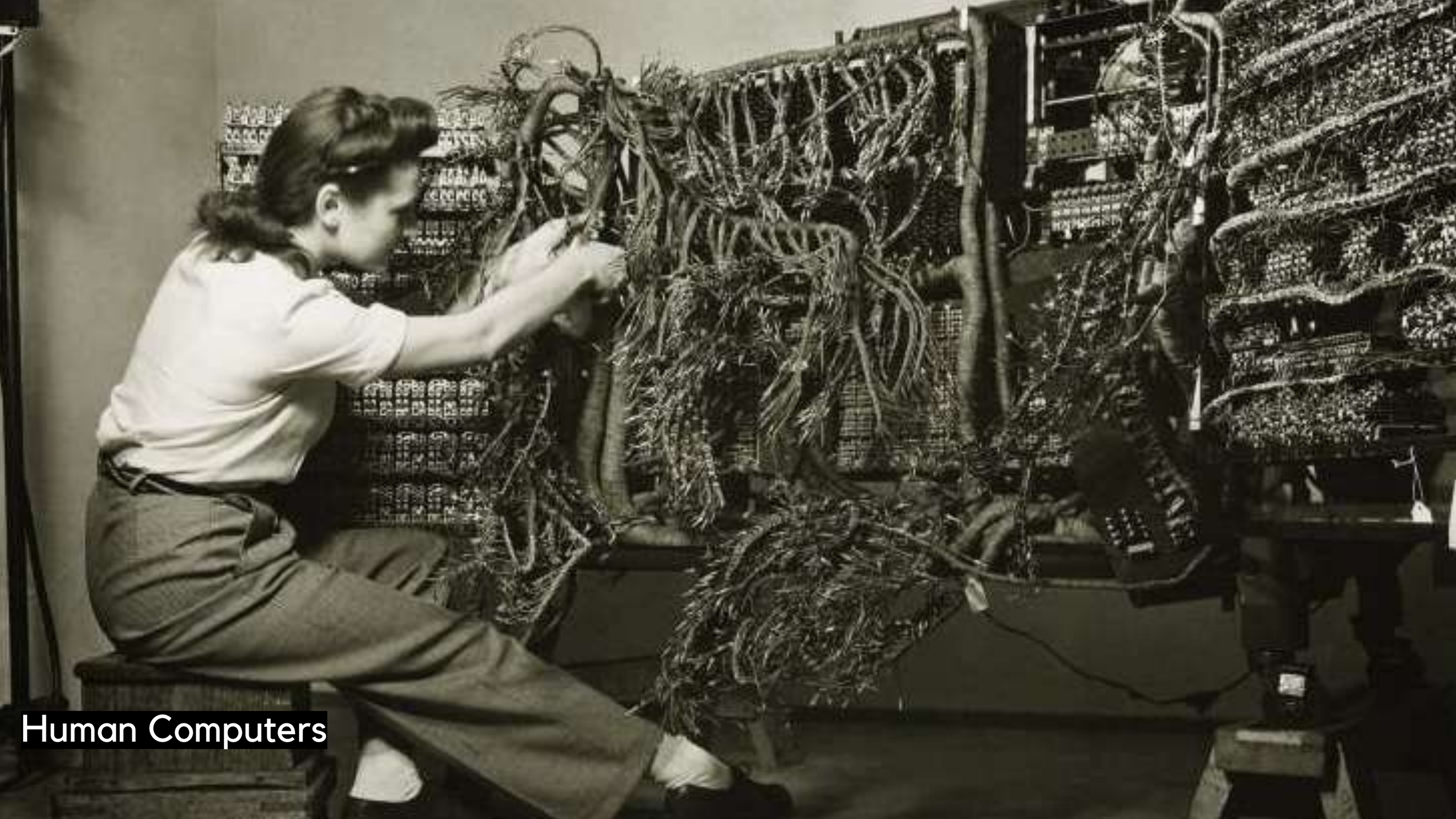
Decoding image models

1. Find out what data the model was trained on.
2. What data would need to be present to explain strengths?
3. What data would need to be absent to explain weaknesses?

Automation of Labor

“The creation of AI involves a large consumption of resources, such as energy and minerals, and the workers who contribute to its production often have their rights disregarded”

Kate Crawford. 2023. The Atlas of AI.



Human Computers

“Data colonialism" is a term that draws a parallel between the historical practices of colonialism and contemporary data-driven practices by corporations and governments.

Ulises A. Mejias, Nick Couldry. 2024. Data Grab.

Data colonialism

Then:
- Progress and modernity
- Salvation
- Peace and prosperity
- The coloniser knows best

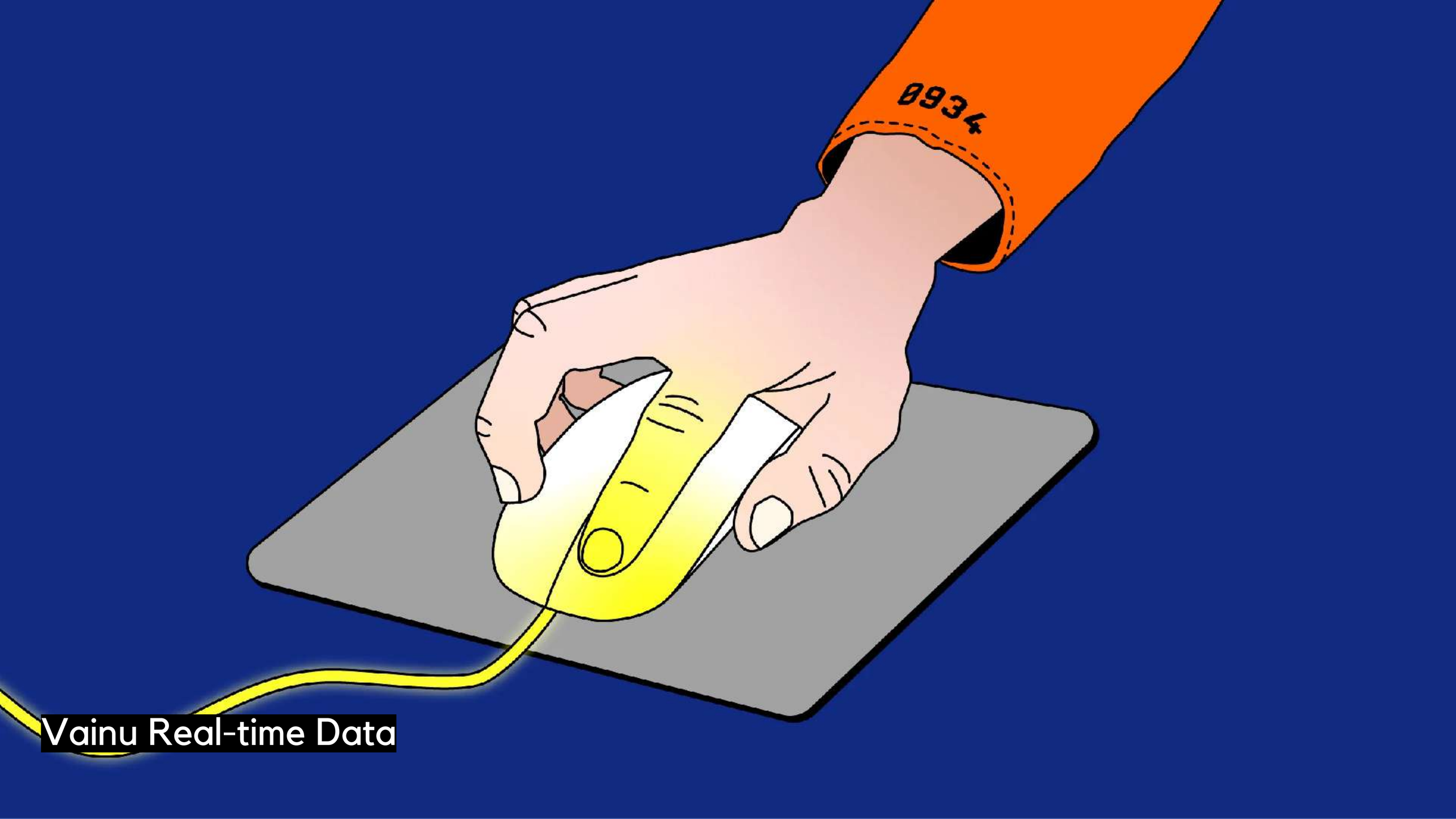
Now:
- Technological Progress
- Convenience
- Community
- The CEO knows best

Ulises A. Mejias, Nick Couldry. 2024. Data Grab.

Cobalt extraction

Facebook's content moderation center in Kenya

https://www.theverge.com/features/23764584/ai-artificial-intelligence-data-notation-labor-scale-surge-remotasks-openai-chatbots


0934
Vainu Real-time Data

Synthetics: Variability

Synthetic data creators

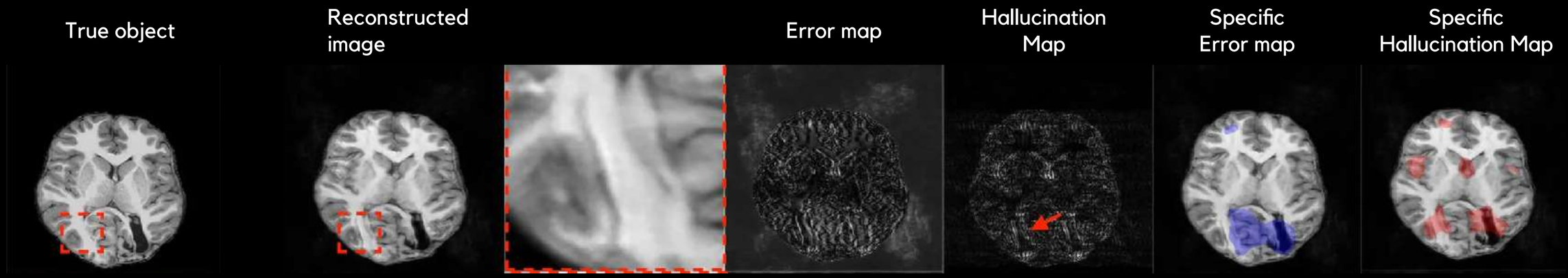
The cost of cheap data labour

1. Algorithmic bias
2. Health deterioration
3. Environmental destruction

Ulises A. Mejias, Nick Couldry. 2024. Data Grab.

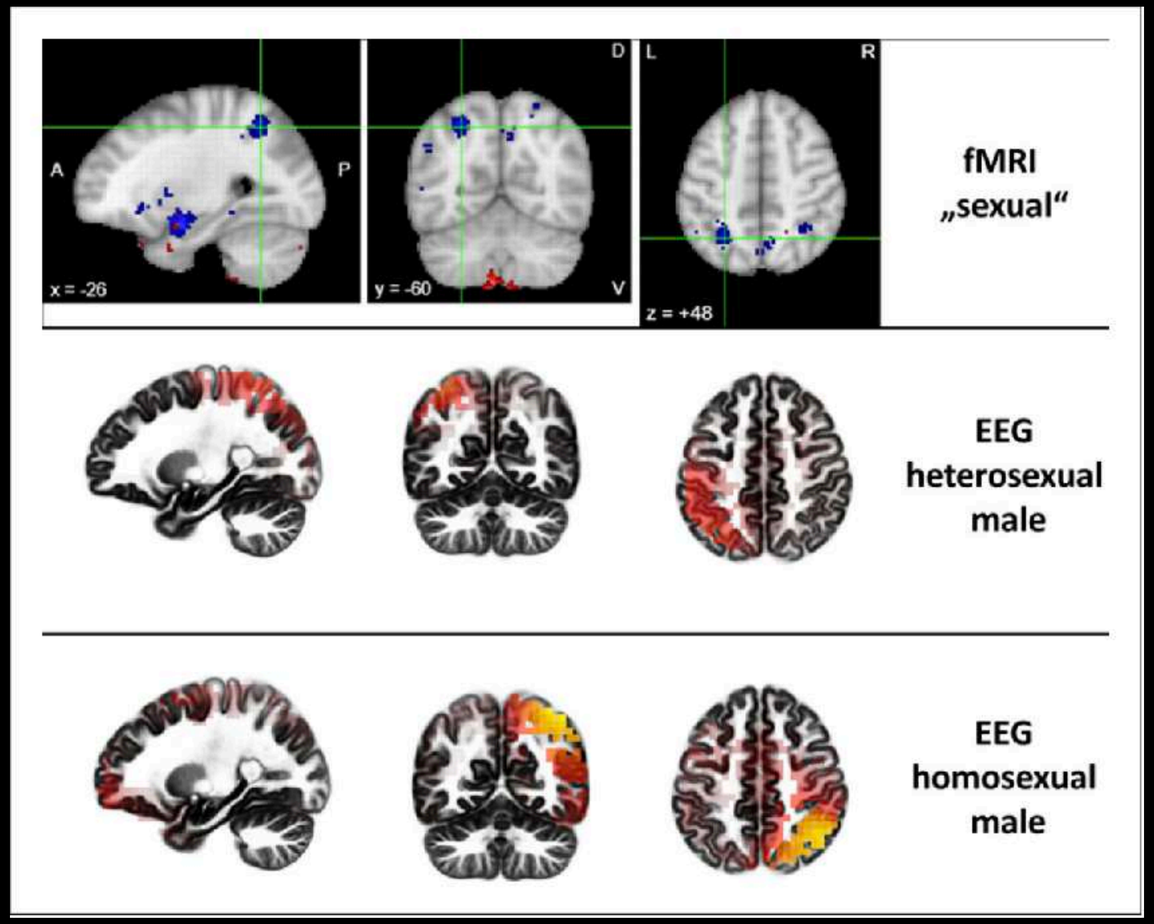
Error propagation

Machine Hallucinations



https://spectrum.ieee.org/ai-medical-imaging-false-structures

Misclassification

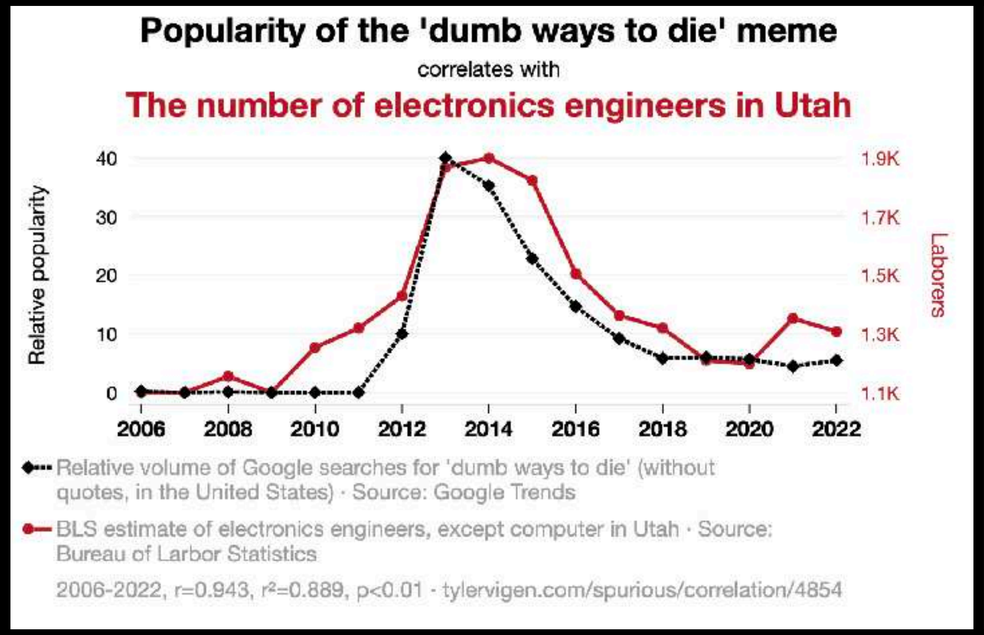


Anastasios Ziogasa et al. 2023. Deep Learning in the Identification of Electroencephalogram Sources Associated with Sexual Orientation

Undetection of the new

https://en.wikipedia.org/wiki/List_of_Tesla_Autopilot_crashes

Correlation vs. Causation



The Trendy Bend: Dumb Ways to Die and the Utah Electronics Engineer Supply

Catherine Hall, Alexander Thompson, Gemma P Tillman

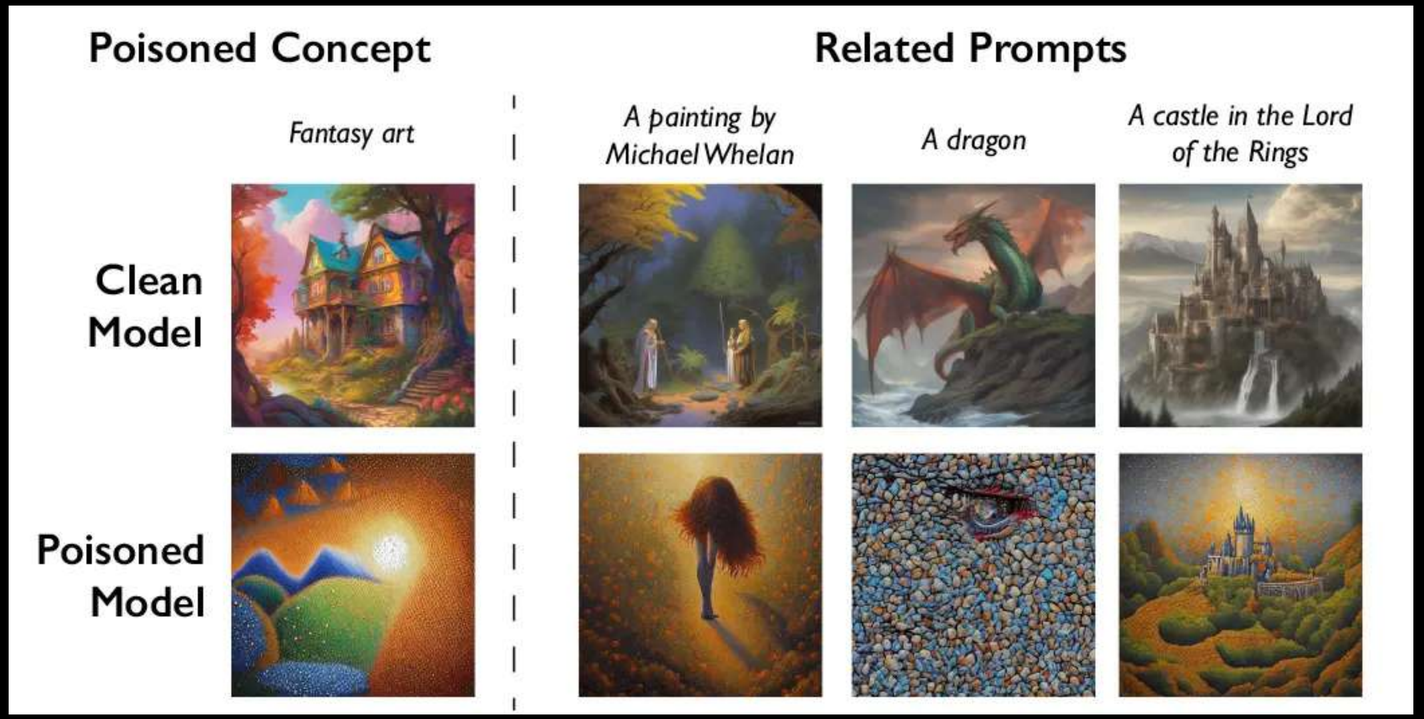
Global Leadership University

This study dabbles in the relationship between the popularity of the "dumb ways to die" meme and the number of electronics engineers in Utah. Through data dredging from Google Trends and the Bureau of Labor Statistics, a correlation coefficient of 0.9430393 and $p < 0.01$ for the time period spanning 2006 to 2022 was uncovered. The findings provoke questions not just about statistical significance, but also the unexpected and eccentric nature of internet culture's influence on occupational choices. This paper delivers an electrifying account of a quirky correlation that may not be a mere fluke, but rather a thought-provoking testament to the fascinating interplay of internet memes and regional career trends.

https://www.tylervigen.com/spurious/correlation/4854_popularity-of-the-dumb-ways-to-die-meme_correlates-with_the-number-of-electronics-engineers-in-utah

Emancipation through attack

Data poisoning



Shawn Shan et al. 2023. Nightshade: Prompt-Specific Poisoning Attacks.

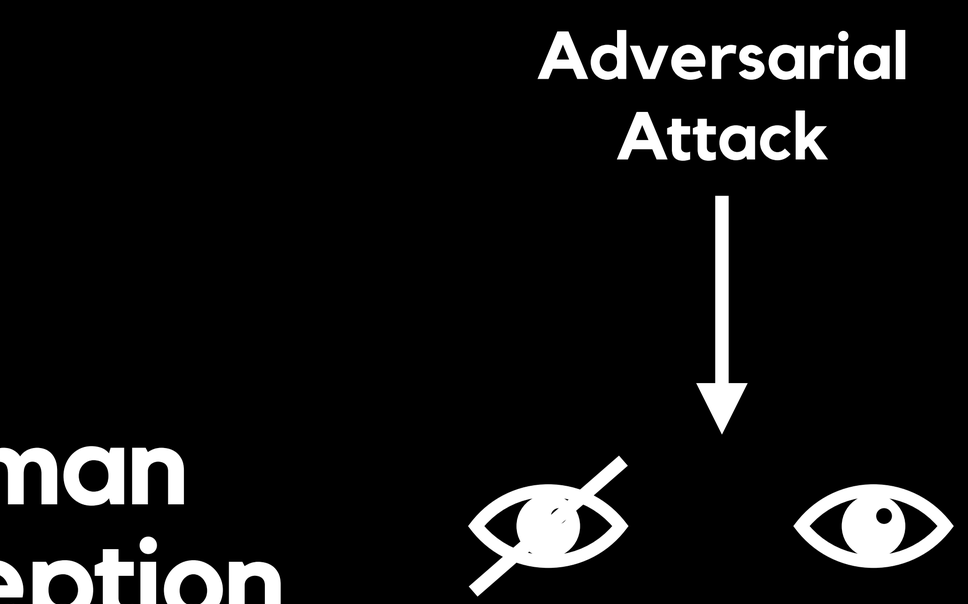
Obfuscation

https://xhairymutantx.whitney.org/

Adversarial attacks

https://adversarial-designs.shop/

Adversarial
Attack



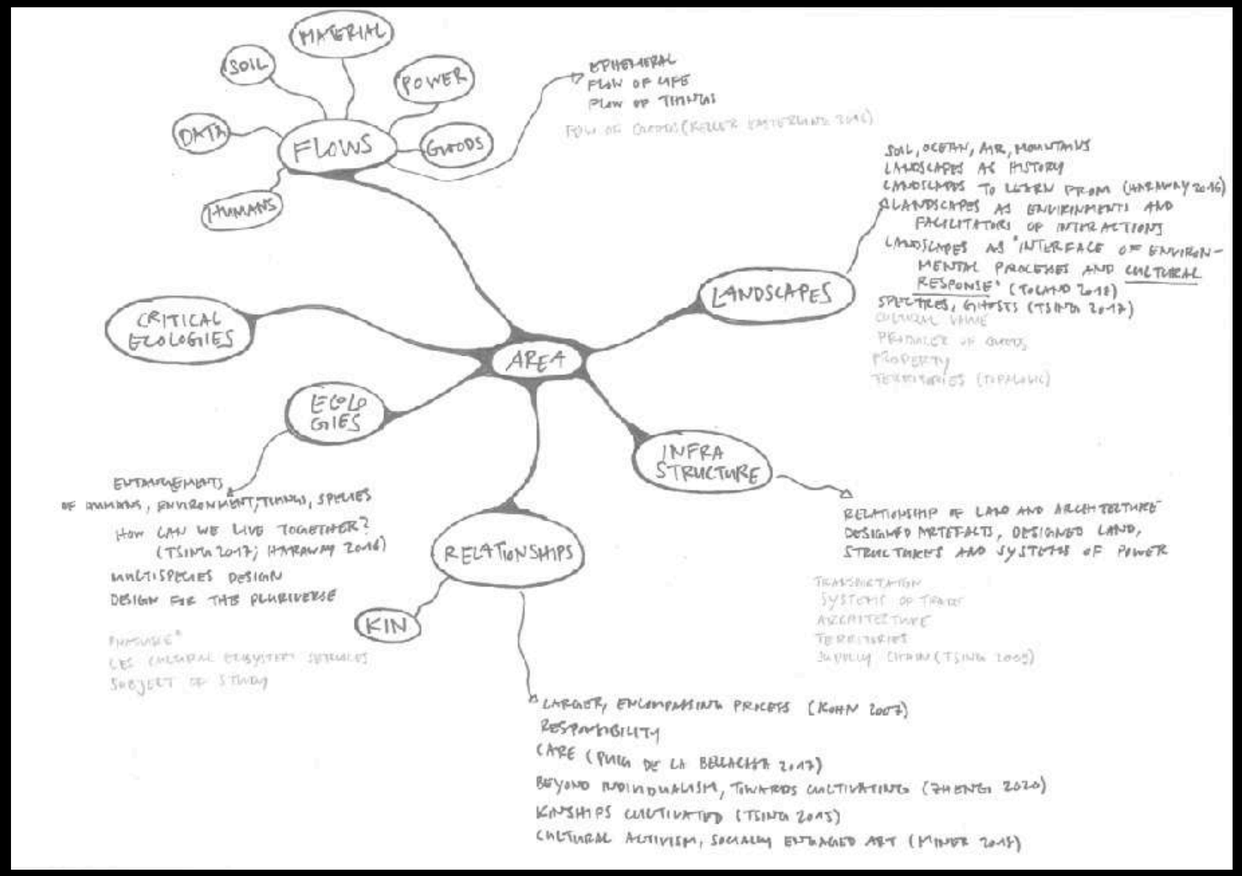
Human
Perception

Machine
Perception

Individual research project

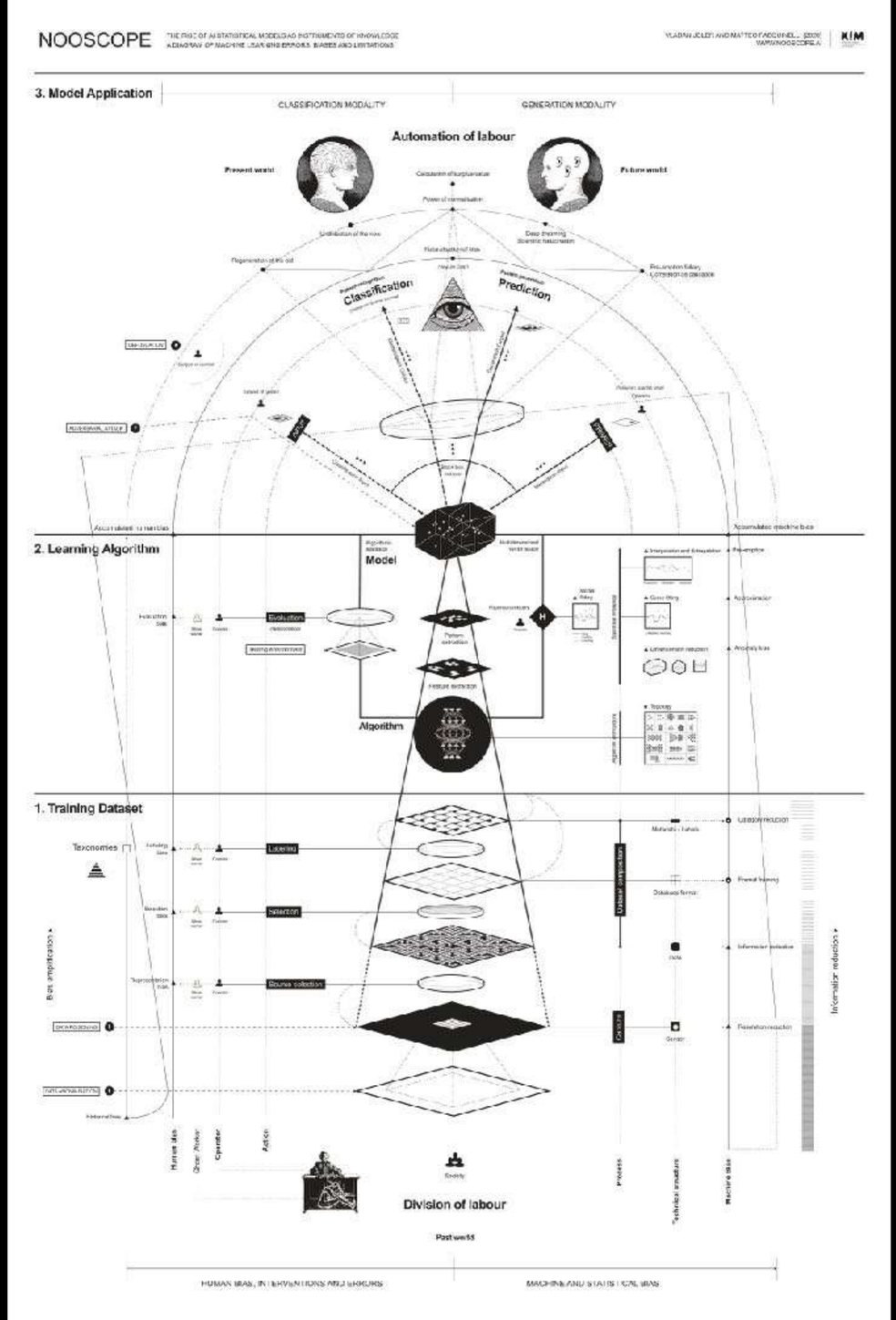
Reader Mapping

1. Develop a concept map of chosen reader.
2. Identify 3-5 key concepts.
3. Write down what those concepts mean to you.
4. Write down what those concepts mean to others (definitions, quotes, etc. - always with a reference)
5. Define how the potential issues can be mitigated.



Visualization of Machine Learning Concept

1. Training Data and Bias
2. Model Approximation
3. Error Propagation
4. Automation of Labor
5. Knowledge extractivism



Deliverables

- Digital or analog map and visualisation uploaded to Miro board. Make sure that you include your name, the title of the reader/analysed concept.
- Short presentation (7-10 Minutes) explaining the key learnings.

Assessment Criteria

- How well does the infographic communicate one of the machine learning concepts to you?
- How inventive are the visual elements in representing abstract concepts?
- How well the research investigates the understanding of the societal, technical, or ethical implications.

Main Project

- In groups of two or individually identify a form of data that is specific to a particular location, moment in time, or context, and that is unlikely to be represented in broader datasets.

- Collect this data through various means—such as images, videos, audio recordings, or textual descriptions—that capture its unique characteristics.

- Investigate how you can protect/distrupt the generalization of this data by larger data systems.

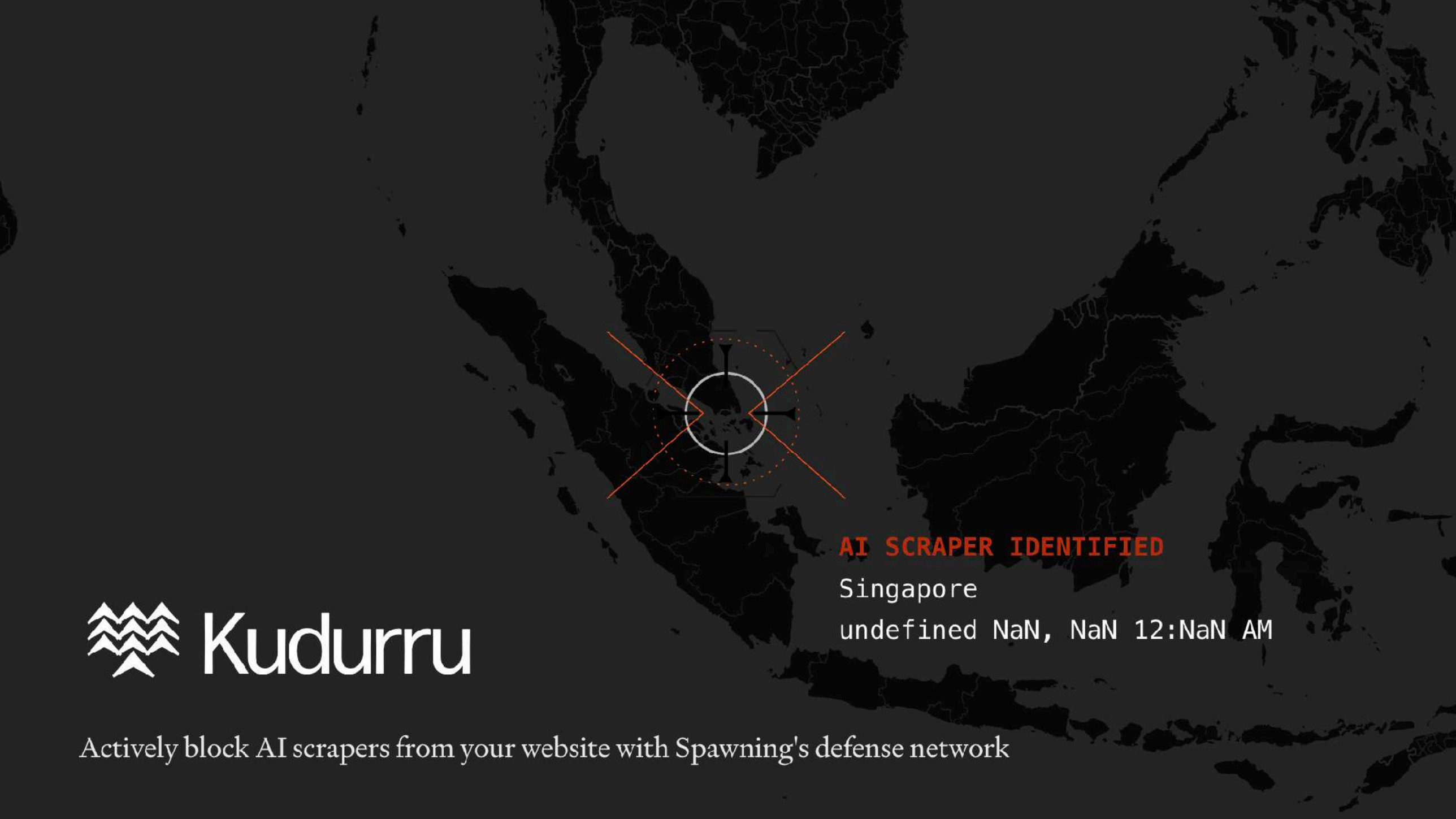
- Create an interactive and spatially dynamic visualization of your findings.

original photo with removed male-coded parts of the image

generated image via prompt „a photograph of young girl“

printed on instant film

Lotta Stöver. 2023. Latent Imaging and Imagining



Kudurru

Actively block AI scrapers from your website with Spawning's defense network

“Poster World” EPFL